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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,930	07/25/2003	Hardayal Singh Gill	HITG.049PA(0548)	5420

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EXAMINER	
MILLER, BRIAN E	

ART UNIT	PAPER NUMBER
2627	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,930	GILL, HARDAYAL SINGH	
	Examiner	Art Unit	
	Brian E. Miller	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-7 and 10-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-7 and 10-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claims 1, 4-7, 10-12 are now pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 4-5, 7, 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Mao (US 6,466,419). Mao discloses a spin valve sensor 150, as shown in at least FIGs. 5A& 5B, including: (as per claims 1 & 7) a first pinned layer 168 having a first width, e.g., larger, and a first magnetic orientation, e.g., into the page, as shown in FGI. 5A; a free layer 160 having a second width, e.g., small, disposed above the first pinned layer; and a bias layer 156 having the second width disposed above the free layer and a second magnetic orientation, i.e., left to right, same as the free layer 160, orthogonal to the first magnetic orientation, wherein the second width is smaller than the first width. It is noted, that with respect to the recited magnetic recording medium in claim 7, Mao shows one, i.e., 102 (FIG. 1), which is disposed proximate the sensor as is known in the art (see also col. 3, lines 49-57); wherein a second pinned layer 164 having a third magnetic orientation anti-parallel to the first magnetic orientation, e.g., out of the page as shown in FIG. 5A), a coupling layer 166 (Ru) disposed between the first and second pinned layers; wherein a thickness of the first pinned layer is substantially equal to a thickness of the second pinned layer, at least inherent to the structure of Mao, since the relative equivalent

thickness of these layers are important for proper functioning of the sensor; (as per claims 4 & 10) wherein an anti-ferromagnetic (AFM) layer 170 of PtMn, for example, is disposed adjacent to the first pinned layer 168; (as per claim 5) wherein a thickness of the AFM layer establishes exchange coupling between the AFM layer and the first pinned layer, which is also inherent to the structure of Mao since that is the purpose of the layer as known in the art.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao. For a description of Mao, see the rejection, supra. While Mao describes a laminated pinned structure including an AFM pinning layer 170, however, Mao is silent as to the first and second pinned layers being self-pinned. Official Notice is taken that self-pinned structures in MR sensors, were notoriously old and well known in the art at the time the invention was made. It would have been considered obvious to one having ordinary skill in the art at the time the invention was made to have substituted the antiferromagnetically pinned structure of Mao with an equivalent "self-pinned" structure as was known in the art. The motivation would have been: providing a "self-pinned" structure would have eliminated the AFM layer and provided a thinner and more compact device, which was a well known design goal in the art and would have been readily provided for by a skilled artisan.

Response to Arguments

5. Applicant's arguments filed 5/9/06 have been fully considered but they are not persuasive.

A... Applicant asserts on page 5 of the "REMARKS" (4th paragraph) that "none of the embodiments disclosed by Mao include suggest a Mao discloses a spin valve head wherein the free layer and a pinned layer, wherein the pinned layer is wider than the free layer. However, none of the embodiments disclosed by Mao include suggest a first pinned layer having a first width, a free layer having a second width, a bias layer having the second width wherein the second width is smaller than the first width, a second pinned layer having a third magnetic orientation anti-parallel to the first magnetic orientation and a coupling layer disposed between the first and second pinned layers, wherein a thickness of the first pinned layer is substantially equal to a thickness of the second pinned layer."

As the above is merely language recited from the claim(s), it does not provide a persuasive argument. However, applicant further submits, in paragraph 5, that "For example, in Fig. 5A of Mao one pinned layer has the same width as the free layer whereas the other pinned layer is wider. In Fig. 5B, one pinned layer has the same width as the free layer whereas the other pinned layer is wider and the bias layer is wider than the free layer. In Fig. 6A and 6B, both pinned layers have the same width as the free layer. In Fig. 6B, the bias layer is wider than the free layer."

This argument appears to be misdirected, since the Examiner has utilized the embodiment of FIGs. 5A & 5B, only. It is respectfully submitted that applicant appears to have misread the reference since FIG. 5B is merely a different view of FIG. 5A, i.e., a cross-sectional view, see

col. 6, lines 1-8. The "width" of the different layers is interpreted to be from left to right of the sensor depicted in 5A, as opposed to FIG. 5B which would be directed to the "depth" of the sensor.

B... Similarly, in paragraph 6, applicant recites "Accordingly, Mao fails to disclose, teach or suggest a second pinned layer having a third magnetic orientation anti-parallel to the first magnetic orientation and a coupling layer disposed between the first and second pinned layers, wherein a thickness of the first pinned layer is substantially equal to a thickness of the second pinned layer," which language is merely a recitation of the claim(s).

This "argument" fails to comply with 37 CFR 1.111(b) because it amounts to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

As set forth in the body of the rejection, the Examiner considers that Mao discloses the aforementioned claim limitations, and the rejection is maintained.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (571) 272-7578. The examiner can normally be reached on M-TH 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian E. Miller
Primary Examiner
Art Unit 2627

BEM
July 20, 2006